REMARKS

In a preliminary matter, claim 5 is amended without prejudice to clarify the antecedent basis of the modified polyvinylbutyral and of the crosslinking agent(s). Also, at the Examiner's suggestion, the claim is amended without prejudice to include the subject matter on page 5 at line 25.

The term "non-blocking" has now been cancelled without prejudice from claims 12 and 15. The claims now recite "modified polyvinylbutyral", a feature which is described at length in the specification on pages 3 to 4.

With respect to rejection under 35 U.S.C. § 112, second paragraph, for indefiniteness, citing the use of the term "process for preparing", it is presumed that the Official Action is referring to independent process claims 12 and 15. Applicant respectfully requests further clarification of this rejection, which appears to be based on an argument that the claim may read on inoperative embodiments. ("[I]t is not clear that said thermoplastic elastomer composition is produced in the claimed process," Office Action in paragraph 4). It is well established, however, that "The standard [for making a rejection based on inoperativeness] is whether a skilled person could determine which embodiments that were conceived, but not yet made, would be inoperative or operative with expenditure of no more effort than is normally required in the art." M.P.E.P. § 2164,08(b). It is respectfully submitted that the specification includes ample descriptions and working examples so that this standard is met.

Moreover, the burden is on the Examiner to provide a reasonable basis for the allegation of inoperativeness. M.P.E.P. § 2164.07(I)(B).The Official Action, however, includes no more than the bare conclusory statement quoted above. Accordingly, it is respectfully requested that this rejection be withdrawn upon reconsideration.

Further with respect to claim 12, it is objected (Official Action on page 3 in paragraph 5) that the claim does not recite any process conditions. Well-established law, however, teaches that a claim is not indefinite simply because it is broad.

M.P.E.P. § 2173.04. In addition, the term "continuous phase", when used, as here, in a description of a dispersion, is familiar to those of skill in the art.

With respect to rejection citing the use of the term "catalyst" in claim 14, this term has a meaning that is clear to those of skill in the art. In addition, the specification, in the paragraph bridging pages 5 and 6, provides a detailed description of how to select a catalyst and specific examples of suitable catalysts. Finally, there are working examples of the invention that include a catalyst. See, e.g., Table 1 on page 7.

Last, with respect to claim 15, modifying agents are defined in the specification on page 3 at lines 21 to 24, and in the patent applications that are incorporated by reference into the present specification. *Vide infra*. Moreover, the PVB and the modifying agent do not react upon contact; therefore, modifying the PVB takes place in a separate process step. Applicant respectfully submits that those of skill in the art are familiar with scores of reactions that do not proceed merely as a result of combining the reagents. Therefore, the distinction between "combining" and "modifying" is clear to those in the art. Last, with respect to the lack of specifically recited process conditions in claim 15, Applicant once more points to the well-established doctrine that "breadth is not indefiniteness." M.P.E.P. § 2173.04.

It is believed that these amendments and remarks overcome the rejections of claims 5, 12, 14 and 15 under 35 U.S.C. § 112, second paragraph, for indefiniteness. Accordingly, it is respectfully requested that these rejections be withdrawn upon reconsideration.

Turning now to substantive issues, the Official Action dated March 19, 2007, has rejected claims 1 through 19 under 35 U.S.C. § 103 as obvious over U.S. Patent No. 6,921,791, issued to Lenox et al. (hereinafter "Lenox"). Claims 1 to 19 are also rejected under 35 U.S.C. § 103 as obvious over Lenox in view of U.S. Patent No. 6,506,835, issued to Hofmann (hereinafter "Hofmann"). In addition, claims 1 through 19 are rejected under 35 U.S.C. § 103 as obvious over European Patent Appln. No. 0 853 097 by Ward et al. (hereinafter "Ward"). Finally, claims 1 to 19 are provisionally

rejected for judicially created obviousness-type double patenting as unpatentable over pending U.S. Patent Appln. No. 10/333,993, and also provisionally rejected under 35 U.S.C. § 103 as obvious over pending U.S. Patent Appln. No. 10/333,993.

These are the sole substantive reasons set forth in the Official Action why the present application should not be allowed. Facts and reasoning submitted earlier in the prosecution history are neither withdrawn nor abandoned. In addition, Applicant respectfully traverses these rejections for the reasons set forth below.

To begin with Lenox, none of the independent claims presently includes the term "crosslinking polyvinylbutyral", as is alleged in the Official Action in paragraph 13 on page 7. It is therefore requested that any rejection based on the use of this term be withdrawn upon reconsideration.

In addition, it is well established that a claim is not obvious unless the cited references teach or suggest every element of the claimed invention. M.P.E.P. at § 2143. Each of independent claims 1, 12 and 15 explicitly recites that "the crosslinked polyvinylbutyral is dispersed as a discrete phase in the continuous phase of the thermoplastic elastomer composition".

Nowhere in Lenox, however, is it taught or even suggested that the thermoplastic elastomer may be a dispersion. To the contrary, in fact, the polymer blend described in Lenox **must not** be a dispersion with a discrete phase and a continuous phase. See, for example, Lenox in column 3 at lines to 55: "This [method] **needs to be carried out** [at] temperatures above 250°F. using conditions of shear sufficient to cause **molecular blending** and reaction of the polymeric components." [*Emphases supplied.*]

Those of skill in the art are well aware that dispersions are not uniformly blended at a molecular level. An example of molecular blending is a true solution, such as a mixture of salt and water, or ethanol and water.

Applicant respectfully points to the most common examples of dispersions: milk (dispersion of discrete fat and protein globules in a continuous phase of water),

salad dressing (dispersion of discrete oil droplets in continuous phase of vinegar (water and acetic acid)), and paint (dispersion of discrete pigment, filler and polymer latex particles in a continuous phase of water and solvent(s)). In salad dressing, milk and paint, however, the fats and polymers separate into a discrete dispersed phase in the continuous aqueous phase.

Plainly, then, Lenox does not describe a dispersion including a discrete phase and a continuous phase, as the claims specifically recite; in fact, Lenox teaches away from dispersions by specifically requiring **molecular blending**. Accordingly, it is respectfully requested that the rejection of claims 1, 12 and 15 under 35 U.S.C. § 103 citing Lenox be withdrawn upon reconsideration.

With respect to Lenox in view of Hofmann, it is clear that the present claims are directed not only to the composition, but rather also to the structure or morphology of the thermoplastic elastomer composition. Therefore, even references that teach or suggest all the components of the composition do not render the claimed invention obvious, unless they also teach or suggest the claimed morphology. Lenox, as is set forth in detail immediately above, not only does not teach or suggest the claimed morphology, but in fact teaches that any morphology other than molecular blending is undesirable.

Hofmann, though, does describe a continuous phase of PVC and a discrete phase of dispersed PVB domains (column 4 at lines 1 to 14); however, the PVB domains in Hofmann are not crosslinked, as is specifically required in independent claims 1, 12 and 15. Rather, Hofmann's combination of PVB and ethylene copolymer with carboxyl and/or carbon monoxide functionality corresponds to the modified polyvinyl butyral that is described in the specification on page 5 at lines 17 to 27. This modified PVB is not crosslinked, but rather is the precursor of the crosslinked PVB. In particular, "modified PVB is crosslinked to form the PVBX elastomer of the present invention." *Id.*

Further in support of this point, Applicant points to U.S. Appln. No. 10/333,993, published as U.S. Patent Appln. Publn. No. 2003/0212203, which claims priority to

U.S. Provisional Patent Appln. No. 60/224,126. The provisional patent application, which is incorporated by reference into the present application, plainly states that

> Modification of PVB can be by physical blending or by chemical modification. It is preferred for the purposes of the present invention that PVB be chemically modified to add crystallinity by **covalently bonding to a second component**. Modification of PVB in this manner can result in physical compatibility in blends of PVB with a second component. PVB has hydroxyl functionality, and can react with chemical compositions having functionality capable of reacting with hydroxyl groups. Chemical modification can occur when the PVB resin is reacted with a second component. The second component can be any polymer that is capable of reacting with the hydroxyl functionality of the PVB. **For example, the second component can include carboxylic acid functionality or derivatives thereof.** Such derivatives can [include] ester, anhydride, isocyanate, or acid chloride functionality, for example. Multicomponent mixtures of various hydroxyl-reactive functionalities can be useful in the practice of the present invention.
>
> The second component can be monomeric, polymeric, or a mixed composition. Preferably the second component is a polymer composition that includes anhydride funtionality, such as is available commercially from E. I. DuPont de Nemours and Company under the Fusabond® brand name, or carboxylic acid functionality. Fusabond® polymers are polyolefins having anhydride functionality.

(U.S. Provisional Patent Appln. No. 60/224,126, page 3 at lines 5 to 25; *emphases supplied.*) Again, the modified PVB is not crosslinked. Instead, it is a polyvinyl butyral that has formed a covalent bond with a second, hydroxyl-reactive component.

Because Lenox and Hofmann, alone or in combination, do not teach or suggest every element of independent claims 1, 12 and 15, Applicant respectfully requests that the rejections of these claims under 35 U.S.C. § 103 be withdrawn upon reconsideration.

Third, with respect to Ward, the Official Action (page 10 at paragraph 20) points to an instance in which the hydrogen-bonded composition described by Ward (see, e.g., Abstract of Ward) is referred to as a "reacted blend" (column 3 at line 22).

This designation is plainly in error, however, when, as well-established law requires, the reference as a whole is considered. M.P.E.P. § 2141.01(II).

For example, Ward also states in the paragraph bridging columns 2 and 3 that "the polar moiety of the polar-moiety containing polymer must be able to **hydrogen bond** with the PVB". In addition, in the paragraph bridging columns 3-4 of the reference it is stated "Examples 14-17 show the results of mixing a similar polymer with PVB but the polymer is non-polar and is not capable of **hydrogen bonding** and so does not form a suitably non-sticking composition." At col. 3, lines 17-19, the claimed compositions of Ward are described as "**hydrogen bonded** blends(s) of PVB and the polar-moiety containing polymer". It is clear from these disclosures that Ward is directed to formation of modified polyvinylbutyrals wherein **hydrogen bonds** are formed between the polyvinylbutyral and the polar-moiety containing polymer.

In contrast, in Applicant's chemically modified polyvinylbutyral, the modification takes place by formation of covalent bonds through chemical reaction of the hydroxyl moieties of the polyvinylbutyral and the functional groups of the second component. Thus, Applicant's modified polyvinylbutyral compositions are distinct and different chemical species from those described by Ward. It is well known that bond strengths of covalent bonds are much higher than those of the relatively weak hydrogen bonds. Formation of such covalently bonded compositions requires considerably higher energy input than mere mixing or melting. Applicant's modified PVB is formed only under conditions such that actual chemical reaction occurs.

Ward describes a polyvinylbutyral that is hydrogen bonded by mixing with a polar moiety-containing polymer and that forms a mixture that is sufficiently non-sticking to be extrudable and is suitable for flooring. Applicant's invention requires more than a mere mixing or blending of components to form a miscible mixture. It requires actual formation of new covalently bonded species. In contrast, Ward teaches away from such covalently bonded compositions by its clear teaching of hydrogen-bonded species.

As is described above, then, the chemically modified polyvinylbutyrals are not taught or suggested by Ward. Therefore, the crosslinked polyvinylbutyrals that are specifically recited features of independent claims 1, 12 and 15, and that are the product of further reaction of Applicant's modified polyvinylbutyrals, are also neither taught nor suggested.

It is further noted that the assertion in the Official Action that Ward describes a continuous phase (page 10 at paragraph 21) does not form a proper basis for a rejection under 35 U.S.C. § 103. As is set forth above in detail, Ward simply does not teach or suggest every element of the claimed invention. M.P.E.P. § 2143.

For these reasons, it is believed that independent claims 1, 12 and 15 are is not obvious in view of Ward. Therefore, it is respectfully requested that the rejection of these claims under 35 U.S.C. § 103(a) citing Ward be withdrawn upon reconsideration.

Claims 1 to 11, 13, 14, and 16 to 19 depend, directly or indirectly, from independent claims 1, 12 and 15. It follows by statute that these claims are also not obvious, for at least the same reasons set forth above with respect to claims 1, 12 and 15. Consequently, Applicant further respectfully requests that the rejections of these claims under 35 U.S.C. § 103 be withdrawn upon reconsideration.

Finally, in the Official Action dated September 27, 2006, claims 1 to 19 are rejected under the judicially created doctrine of obviousness-type double patenting. It is alleged that the claims are obvious over the claims of pending U.S. Patent Appln. No. 10/333,993. Without assenting to this proposition, and in order to further the prosecution, Applicant submits herewith an executed Terminal Disclaimer with respect to pending U.S. Patent Appln. No. 10/333,993. Consequently, Applicant respectfully requests that the rejection of claims 1 to 19 under the judicially created doctrine of obviousness-type double patenting be withdrawn upon reconsideration.

In this connection, claims 1 to 19 are also provisionally rejected under 35 U.S.C. § 103 as obvious over copending U.S. Patent Appln. No. 10/333,993. It is

unclear in what manner this rejection differs from a rejection citing the judicially created doctrine of obviousness-type double patenting. Accordingly, Applicant respectfully submits that the Terminal Disclaimer filed concurrently herewith operates to overcome any rejection under 35 U.S.C § 103 citing copending U.S. Patent Appln. No. 10/333,993. See, e.g., M.P.E.P. at §§ 804 and 804.04.

Because the Official Action has asserted that copending U.S. Patent Appln. No. 10/333,993 is prior art against the present application under 35 U.S.C. § 102(e), though, Applicant notes that § 102(e) applies to "(1) an application for patent ... **by another** filed in the United States before the invention by the applicant or (2) a patent granted on an application for patent **by another** filed in the United states before the invention by the applicant for patent..." 35 U.S.C. § 102(e), *emphasis supplied.*

The inventor and Applicant of the present application is not "another" , however, but rather is the selfsame Dr. George Henry Hofmann who is also the inventor and Applicant of copending U.S. Patent Appln. No. 10/333,993. Therefore, copending U.S. Patent Appln. No. 10/333,993 cannot properly be cited as prior art against the present application under 35 U.S.C. § 102(e). Accordingly, Applicant respectfully requests that any rejection based on the use of copending U.S. Patent Appln. No. 10/333,993 as prior art under 35 U.S.C. § 102(e) be withdrawn upon reconsideration.

Conclusion

A Petition for an Extension of Time for three months, an executed Terminal Disclaimer, and the required fees for the extension and the Terminal Disclaimer are filed concurrently herewith. Should any further fee be required in connection with the present response, the Examiner is authorized to charge such fee, or render any credit, to Deposit Account No. 04-1928 (E.I. du Pont de Nemours and Company).

In view of the above amendments and remarks, it is felt that all pending claims are in condition for allowance, and such action is earnestly solicited. In closing, the Examiner is invited to contact the undersigned attorney by telephone at (302) 892-1004 to conduct any business that may advance the prosecution of the present application.

Respectfully submitted,

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